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REPORT BY THE

Comptroller General

OF THE UNITED STATES

UNCLASSIFIED

Multiyear Authorizations For Research And Development

GAO believes that instituting a multiyear research and development (R&D) authorization process would be an important first step in improving R&D planning, budgeting, and oversight. Such a process would

--give the Congress more time to examine a larger number of R&D programs,

--provide the executive branch with time to comply with congressional requests for additional budgetary and planning information,

--increase interaction between the Congress and the executive branch, and

--increase the stability of funding for R&D programs.

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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

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The Honorable Pete V. Domenici
Chairman, Committee on the
Budget
United States Senate

The Honorable Bob Packwood
Chairman, Committee on Commerce,
Science, and Transportation
United States Senate

The Honorable Orrin G. Hatch
Chairman, Committee on Labor
and Human Resources
United States Senate

The Honorable James R. Jones
Chairman, Committee on the
Budget
House of Representatives

The Honorable Don Fuqua
Chairman, Committee on
Science and Technology
House of Representatives

During the 96th Congress, the House and Senate addressed the need for a multiyear authorization cycle for research and development (R&D). We have testified and provided written comments to the Congress on several occasions in support of such a cycle. In addition, we recently conducted interviews with congressional staff on the problems and issues associated with the R&D authorization process. Since the House recently introduced H.R. 1908--the successor bill to H.R. 7689 which passed the House in the previous Congress--we thought it would be useful to provide your committees with a summary of our views on the need for a multiyear R&D authorization process.

In the following discussion and in appendix I, "GAO Positions on Multiyear Authorizations for Research and Development," we have summarized our positions on the need for such a process. In appendix II, "Statements by the Comptroller General Relating to Multiyear Authorizations for Research and Development," we have provided a list of our complete statements.

In our previous statements, we addressed a number of problems associated with the current annual authorization process and its effect on R&D activities in the Federal Government. We noted that the current process may not allow sufficient time for your committees to review and analyze the large number of R&D programs currently taking place. These time constraints also place considerable strain on the executive branch's ability to supply the budgetary and planning information in sufficient time to be used in authorization hearings. As the emphasis on reduced Federal spending grows, the task of making priority and trade-off decisions on authorizations for specific R&D programs will likely become even more difficult.

We believe that implementing a multiyear R&D authorization process could help alleviate the pressures caused by an annual authorization cycle, provide additional time for the committee to analyze a greater number of R&D activities, and give the executive branch adequate time to comply with congressional requests for information relating to program directions and objectives, the need for future R&D work, and Administration goals and policies. We also believe that a multiyear authorization process could help push the executive branch into acquiring a long range perspective on R&D. Such a perspective is needed to support any further movement towards long range R&D planning based upon defined national objectives. In addition, such a process would serve as an important first step towards improving R&D budgeting as a whole and enhancing the stability of R&D programs, especially if a "rolling" multiyear authorization process, which always projects authorizations a year beyond the current budget year, is implemented.

We are pleased to note that some of our earlier suggestions and recommendations concerning the need for long term R&D planning and better budgetary information have been included in the new version of the multiyear authorizations bill. If there is anything further we can do to assist your committees in considering multiyear R&D authorizations, please call on us.

Copies of this letter are being sent to the Director, Office of Management and Budget.

Milton J. Socolar

Acting Comptroller General
of the United States

GAO POSITIONS ON MULTIYEAR AUTHORIZATION FOR RESEARCH AND DEVELOPMENT

This appendix consolidates recent GAO statements to congressional committees on the need for multiyear R&D authorizations. We have also included the views of staff members of the House Committee on Science and Technology and its subcommittees on the problems and issues associated with the R&D authorization process.

INTRODUCTION

In the fiscal year 1981 budget, the Federal Government obligated approximately $37.1 billion for R&D. For such an amount to be used wisely and efficiently, congressional decisionmakers (authorizing committees in particular) must have more complete planning and budgetary information. This information will enable decisionmakers to better understand which R&D programs are being supported, the relationships among the R&D programs being carried out in Federal agencies, and how the support of such R&D programs and initiatives will help to attain specific national objectives. Furthermore, the budget process, in general, must provide the Congress with the time it needs to fully investigate these relationships through hearings, program reviews, and analyses of budget submissions.

R&D now represents 22 percent of that portion of the total annual budget that is considered "controllable." As a result, the growing pressures to decrease Government spending make R&D programs especially vulnerable and force the Congress to make trade-offs among competing R&D programs. At the same time, R&D programs are becoming increasingly complex, requiring additional attention by decisionmakers and more complete budgetary information on the nature and objectives of the programs. However, the current R&D authorization process does not allow congressional decisionmakers enough time to make these decisions carefully. These issues emphasize the need to examine the problems associated with the current R&D authorization process as well as the budgetary information available for congressional use that is supplied by the Office of Management and Budget (OMB), the Office of Science and Technology Policy (OSTP), and the R&D agencies.

PROBLEMS ASSOCIATED WITH AN ANNUAL AUTHORIZATION PROCESS

Currently, most R&D programs are authorized annually under a schedule established by the Congressional Budget and Impoundment Act of 1974. This schedule officially begins on November 10, when the President is supposed to submit a "current services" budget to the Congress. However, for the past 4 years, the Budget and Appropriations Committees have agreed to let OMB submit the current services estimate with the presidential request in January. This schedule is therefore very tight because the entire process,

from presidential request through enactment of authorizations and appropriations, must take place between January and September each year. This tight schedule places heavy burdens on authorizing committees and tends to create legislative bottlenecks in early summer.

A provision included in the Budget Act was designed to help alleviate the scheduling problem. It requires the President to submit requests for new authorizing legislation about 18 months before the start of the fiscal year. However, the executive branch often meets this requirement by requesting "such sums as may be necessary" for the fiscal year following the budget year in draft legislation submitted in the January to March period. This provision, therefore, has not created much "breathing room" in the budget cycle.

The annual authorization process has had a negative effect on both the Congress and the executive branch's ability to make funding decisions on R&D programs and on the ability of the scientific community to conduct R&D. This effect is felt in a number of specific areas.

First, the ability of the agencies and the Congress to establish priorities and operating plans for R&D is hindered. Before the hearings, congressional decisionmakers are given insufficient time to gather information on agency plans to allocate financial resources and to evaluate all R&D programs within each subcommittee's jurisdiction. In most cases, only a small number of important issues or programs are covered in formal authorization hearings, and, usually, little time is spent discussing the overall relationships between various R&D programs, specific national objectives, and the agencies' plans to meet those objectives through future R&D work.

Second, the annual authorization cycle, by its very nature, inhibits the movement toward long range planning: since R&D programs are authorized every year, then identifying new issues and developing R&D strategies to meet those issues is made more difficult. Without long range planning, R&D decisionmakers cannot easily identify and explore the validity of basic assumptions about program operations and economic conditions. Long range planning and budgeting techniques are needed for many R&D areas--like energy--where the planning horizon often extends beyond 5 years. Moreover, because of the time constraints inherent in the current process, the Congress is not able to inquire into all the problems that need future attention and the R&D agencies and OMB/OSTP cannot supply enough information on emerging future issues. In many cases, the Congress learns only through informal contacts with agency officials that work on research on the implications of future technologies, or "futures research," is being performed in the agencies. Informal contacts, however, do not allow R&D decisionmakers to fully analyze the nature of a problem or issue and to establish corrective programs and policies in a formal authorization or oversight setting.

Third, the time constraints and lack of adequate information prevent the Congress from fully analyzing the large number of cross-agency programs, R&D programs that do not clearly fall within the "mission" of any one agency. For example, research on lasers, materials, and nutrition affect many agencies simultaneously and are, therefore, difficult to analyze. At this time, however, information on these and other Government-wide issues is extremely fragmented and not readily available to congressional decisionmakers from OMB, OSTP, or the agencies.

Fourth, program stability is adversely affected by the current annual authorization process. Acquiring scientific knowledge and developing scientific and technical processes usually takes a very long time. Facilities must be built, equipment must be purchased, and technical staff must be hired before work can even begin. Furthermore, R&D activities, and especially those programs categorized as basic research, usually take place many years before the significance of results can be fully assessed.

Once started, R&D programs must be continued over many years if they are to produce useful results. Because the significance of early results are often not immediately apparent, an annual authorization cycle makes long term R&D activities extremely vulnerable to budget cuts and program interruptions. Yearly changes in spending on R&D can have significant adverse effects, not only on the quality of scientific research, but also on the continuity of project research teams.

HOW A MULTIYEAR AUTHORIZATION PROCESS COULD HELP

General issues

Over the years, we have strongly supported the idea of a multiyear R&D authorization cycle. This process could lay a foundation for congressional inquiry into existing programs and new initiatives. At the same time, it could strengthen the congressional oversight process for R&D. Two immediate advantages would result if such an authorization cycle were used. First, a multiyear authorization cycle could encourage longer range decisions. Second, a multiyear authorization cycle would lighten the heavy workload imposed on committees by the yearly authorization cycle.

It is important to recognize that a multiyear authorization process is only a first step toward increasing the effectiveness and efficiency of R&D decisionmaking. During our interviews with committee and subcommittee staff members, we were continually reminded that the authorization cycle is only one part of the total budget process for R&D. If R&D budgeting as a whole is to be improved, then a multiyear R&D appropriations process would also eventually need to be implemented. Furthermore, some type of consistent treatment of inflation would be necessary if a multiyear authorization process were to be effective. Inflation can

have a potentially large effect on the conduct of R&D programs by increasing the cost of scientific equipment and personnel. If R&D programs are to be authorized and eventually appropriated on a multiyear basis, then an adjustment in the program's funding level based on projected inflation rates would be needed.

Establishing priorities and plans for R&D

In recent years, the Congress and the General Accounting Office have repeatedly spoken on the need for the agencies and the Office of the President to establish priorities and plans for R&D. If the Congress is to better determine which programs to fund, whether the R&D agencies are allocating their financial resources appropriately, and if funding or program changes are necessary, then the R&D agencies and OMB need to provide more complete budgetary and planning information. This information should link (1) specific R&D programs to the agency's mission and national objectives, (2) ongoing R&D work and future programs, and (3) specific R&D programs in one agency and similar work in other agencies. In most cases, current information supplied to the authorizing committees only lists the amounts spent on a given program or in a given R&D area in a single agency.

In our testimony on H.R. 7178, we said that a multiyear authorization process would allow more time for budget review and analysis. The Congress would have more time to make their needs known, and the agencies would have more time to respond to the Congress' needs for additional information and analysis.

Long range R&D planning

There has been considerable focus on the need for congressional and executive branch decisionmakers to spend additional time investigating problems and issues that are likely to surface in the future. We believe a multiyear R&D authorization process would permit the Congress to conduct more long range planning because it would have more time to inquire about whether new policies and initiatives are needed and how they should be developed. The process would also provide a good foundation for more general futures research. Also, the R&D agencies and OMB/CSTP would be able to supply more information on emerging future issues.

The process could be implemented in ways that will focus on basic policy assumptions and the assessment of alternatives for achieving long term objectives. If better futures research is one of the goals in implementing multiyear program objectives, then committees should implement reauthorization procedures somewhat differently. Instead of the detailed program review common in annual authorizations, the Congress could use multiyear authorizations to concentrate on these policy assumptions and alternatives. Furthermore, multiyear program authorizations could stimulate futures research if executive branch justification

material is directed toward underlying policy assumptions and if congressional oversight is focused on long term policy alternatives.

Cross-agency programs

Since issues related to Government-wide R&D programs are rarely completely resolved in a single year, a multiyear authorization process could significantly aid the Congress in gaining insight into these issues. If these programs are authorized for 2 or more years at a time, then the executive branch will have to specify and defend program objectives over longer time periods than the current annual budget cycle. This long range perspective is better suited to the examination of cross-cutting R&D issues.

The Congress could take steps when implementing multiyear authorizations to improve the quality of information it receives about R&D activities that cut across agency lines. Since the agencies have the detailed information needed to examine these programs, one such step would be to have the R&D agencies use more comparable budget classification systems.

Program stability

A multiyear R&D authorization process would be a first step towards enhancing program funding stability since financial resources would be authorized for 2 or more years. Long term R&D programs would be less susceptible to interruptions, and facilities and equipment could be better maintained since program managers could more easily determine the amount of funds that might be available in the future. Furthermore, staff levels would also be less subject to interruptions if scientists, researchers, and managers knew that funds were authorized for several years. A multiyear authorization cycle could provide this needed sense of security to research staff members.

However, implementing a simple multiyear authorization process would not be enough to guarantee the stability of R&D programs. An additional way to increase continuity and stability would be to adopt a "rolling" multiyear authorization process that always projects authorizations a year beyond the current budget year. The process would be started with a 3-year authorization and then extended for 2 years at the end of every second year. This approach would avoid the situation that occurs at the end of a "normal" 2-year authorization, when the agency must undertake detailed program planning for the budget year before the authorization for that year is passed. (See p. 8 for a comparison of a "rolling" 2-year authorization with a "normal" 2-year authorization.) Because it increases stability and continuity, a "rolling" multiyear authorization process would be well suited for research programs with long term objectives, characterized by the need to maintain levels of effort in different fields of science.

"Rolling" 2-Year Authorization
Projected Over 1980-1987

1980	1981	1982	1983	1984	1985	1986	1987
Initial authorization passed covering 1981, 1982, 1983		Second authorization passed covering 1984, 1985		Third authorization passed covering 1986, 1987		Fourth authorization passed covering 1988, 1989	
	← First Authorization →			← Second Authorization →		← Third Authorization →	

"Normal" 2-Year Authorization
Projected Over 1980-1987

1980	1981	1982	1983	1984	1985	1986	1987
Initial authorization passed covering 1981, 1982		Second authorization passed covering 1983, 1984		Third authorization passed covering 1985, 1986		Fourth authorization passed covering 1987, 1988	
	← First Authorization →		← Second Authorization →		← Third Authorization →		

CONCLUSIONS

The current emphasis on cuts in Federal spending and balanced budgets has made R&D programs and activities extremely vulnerable to reductions in funding levels. This situation has forced congressional and executive decisionmakers to make increasingly difficult priority and trade-off decisions between competing programs. The current annual authorization process for R&D has made this task even more difficult because congressional authorizing committees do not have enough time to investigate existing program objectives, new R&D initiatives, and agency R&D plans to deal with future issues. At the same time, these constraints have made it difficult for the executive branch to supply the program and planning information needed in authorization hearings.

A multiyear authorization cycle, while not eliminating all difficulties, could significantly reduce the pressures of the current annual authorization process. Such a cycle could

--provide the Congress with more time to analyze a larger number of R&D programs operating within their jurisdictions and not just the "hot" issues;

--provide the R&D agencies, OMB, and OSTP with more time to comply with congressional requests for information relating to program objectives and directions, future R&D work, and Administration policies;

--allow the Congress to more fully investigate the large number of cross-agency programs;

--support the movement towards long range R&D planning based on defined national goals and objectives;

--increase interaction between the Congress and the executive branch during the entire budget process; and

--increase the stability of funding for R&D programs. However, funding stability greater than 2 years would require an additional mechanism, such as a "rolling" multiyear authorization cycle.

ISSUES FOR CONGRESSIONAL CONSIDERATION

We believe that the Congress should consider several important issues when reviewing a multiyear authorization bill in the current session. They are:

--Whether legislation should provide for the use of automatic adjustments or some other mechanism for dealing with inflation. We have developed several recommendations to cope with inflation in R&D budgeting. OMB could (1) set an upper bound on the number of inflation indexes

used, (2) require annually recosted long term program estimates that are consistent with prevailing prices, or (3) require a separate identification of the effects of inflation on programs in agency submissions.

--Whether the legislation should establish "rolling" multiyear authorizations for those programs with long term objectives.

--How to establish a multiyear authorization process and move towards greater long range R&D planning. While OMB and OSTP are certainly needed to provide comprehensive planning and budgetary information and to help implement any long range R&D planning activities, it is the R&D agencies that have access to the detailed program information needed by the Congress to authorize these programs on a multiyear basis. Therefore, careful attention must be given to the role of the R&D agencies in the decision-making process.

STATEMENTS BY THE COMPTROLLER GENERAL TO CONGRESSIONAL COMMITTEES RELATING TO MULTIYEAR AUTHORIZATIONS FOR RESEARCH AND DEVELOPMENT

Statement on Long Term Planning for National Science Policy, to the Committee on Science and Technology, U.S. House of Representatives, July 31, 1980.

Supplement to Statement on H.R. 7178, the Research and Development Authorization Estimates Act. Letter sent to the Chairman of the Committee on Science and Technology, U.S. House of Representatives, October 7, 1980.

Statement on H.R. 7178, the Research and Development Authorization Estimates Act, to the Committee on Science and Technology, U.S. House of Representatives, June 4, 1980.

Statement on H.R. 4490, the Research and Development Authorization Estimates Act, to the Committee on Science and Technology, U.S. House of Representatives, October 10, 1979.

Statement on Research and Development in the Federal Budget, to the Committee on Science and Technology, U.S. House of Representatives, April 5, 1979.

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